

SHIP DIGEST: VOCATIONAL EDUCATION FOR THE SHIP DISMANTLING INDUSTRY

Stuart A. McKenna¹, Rafet E. Kurt¹ & Osman Turan¹

¹University of Strathclyde, Department of Naval Architecture & Marine Engineering, 100 Montrose Street, Glasgow, Scotland, stuart.mckenna@strath.ac.uk

Keywords : *Ship DIGEST, Ship Dismantling, Vocational Education.*

1. INTRODUCTION

The **Ship Dismantling Insight by Generating Environmental and Safety Training** (Ship DIGEST) project is creating innovative vocational education and training in order to tackle the vital issues of the low standards of health, safety and environmental (HSE) awareness in the ship dismantling industry that, if neglected, will result in a continuation of bad practices, accidents, injuries, and pollution but, if tackled, will have a positive impact within one of the big societal challenges, namely the environment and health and safety within the workplace, identified by the European Commission in its Europe 2020 Strategy (EU, 2009).



Fig. 1: Ship DIGEST Logo

The Ship DIGEST project is funded by the European Union's (EU), Leonardo Da Vinci Transfer of Innovation programme which funds a wide range of vocational training measures, ranging from placements abroad to cooperation projects between training organisations in different countries (EU, 2011). In the context of the Ship DIGEST project, the Transfer of Innovation funding is facilitating the transfer of existing education, tools and products from previous EU funded ship dismantling projects and related industries to vocational outputs for the Turkish ship dismantling community. This transfer is being supported by an international consortium comprising of professionals within the fields of vocational education and training; health, safety and the environment; and the ship dismantling industry.

Turkey is the largest ship dismantling nation in Europe and as an industry is currently in the process of embracing the ongoing changes of implementing standards documented in the EU's Strategy for Better Ship Dismantling and the International Maritime Organisation's (IMO) Hong Kong Convention within its own processes and company policies (EU, 2008; IMO, 2005). However, one of the main problems identified during this transitional period is the lack of knowledge and understanding of the basic health, safety and environmental competences displayed from the management level down.

Therefore the Ship DIGEST project's main aim is to assist the Turkish ship dismantling industry by providing bespoke ship dismantling vocational education and training that will be created in line with the European Qualifications Framework and the European Credit system for Vocational Education and Training which will facilitate the validation, recognition and accumulation of work-related skills and knowledge, in line with policies set in the Bruges-Copenhagen process (EU, 2011).

2. SHIP DIGEST AIMS & OBJECTIVES

Within the EU and the UK's strategies for safer ship dismantling, a number of measures to improve ship dismantling conditions are mentioned; technical assistance and support for developing countries, basic infrastructure for environmental and health protection and safety training programmes (EU 2008; DEFRA 2007).

However, existing pedagogical materials specifically for the ship dismantling industry are very limited and unrecognised in terms of a qualification. There have been technical guidelines published by international bodies (Basel Convention 2003, ILO 2004) outlining what is required for safe and environmentally sound ship dismantling but very few materials exist that provide vocational education for the employees of a ship dismantling facility specifically.

According to recent research, there are approximately 2000 employees working in the Turkish ship dismantling industry, of which 57% has had a primary school education or less. It has also been found that 23% of the employees has been involved in a work related accident and it has been identified that the group of ship dismantling employees who are the most vulnerable to accidents are workers with less than 5 years of service (highest frequency of accidents) and workers over the age of 55 (severity of accidents) (Unal 2011).

Therefore, Ship DIGEST project proposes to identify the training gaps and aims to address them through the creation of bespoke ship dismantling vocational education.

The main aims and objectives of the Ship DIGEST project are as follows:

- Improve, through knowledge transfer, the various identified social and HSE issues in the ship dismantling industry in Turkey by utilising innovative products, tools and vocational education and training from previous EU projects, such as FP6 (ShipDISMANTL), FP7 DIVEST and Recyship, and from similar industries within the EU.
- Create and pilot bespoke ship dismantling vocational education that will address the gaps in the ship dismantling workers and managements' knowledge, understanding and awareness to ensure better HSE standards for the workers and encourage better ownership and responsibility of HSE issues and the perception of risk from the management by the completion of the project.
- Provide sustainable outputs that will contribute to; improving the overall image of the ship dismantling industry, the process of the professionalization of the ship dismantling worker, and making the occupation more credible within society after projects completion.

The above identified aims of the Ship DIGEST project have been chosen to specifically to encourage and ensure that the vocational education created is compatible and relevant to the ship dismantling industry. This has been taken into consideration in the following ways:

- Currently in the Turkish SD industry only 70% of employees, who are classed as low skilled, have access to only very basic vocational education that is unrecognised in terms of qualifications (Unal, 2011). The Ship DIGEST project will be setting up a framework that will provide European wide recognised vocational education to raise the competence levels of a workforce at risk in a growing industry, which in the short term

will improve confidence and in the long term have positive social impacts. This is in line with the strategic framework for European cooperation in education and training.

- This project has the support of the Turkish Government's Ministry of Labour department which will assist in the promotion of lifelong learning by assisting in the transfer and cooperation of the created vocational education and all the ship dismantling yards in Turkey after the project's completion.
- The environmental standards in ship dismantling expected by the EU are increasing. The Ship DIGEST project addresses the skills gap of the ship dismantling employees by providing a vocational education model to assist in increasing the environmental awareness, associated skills and competences to prepare them for the future. This ties in with the "New skills for new jobs" initiative on anticipating and matching labour market and skills needs which contributes to the overall EU 2020 strategy.

3. SHIP DIGEST APPROACH

The Ship DIGEST approach was developed in such a way to ensure that the consortium would successfully and accurately capture and understand the current situation within the Turkish ship dismantling industry. This would allow for the appropriate previously developed tools, products and education to be selected and developed for use in the piloting activities. An overview of the Ship DIGEST project's phases can be seen in Fig. 2.

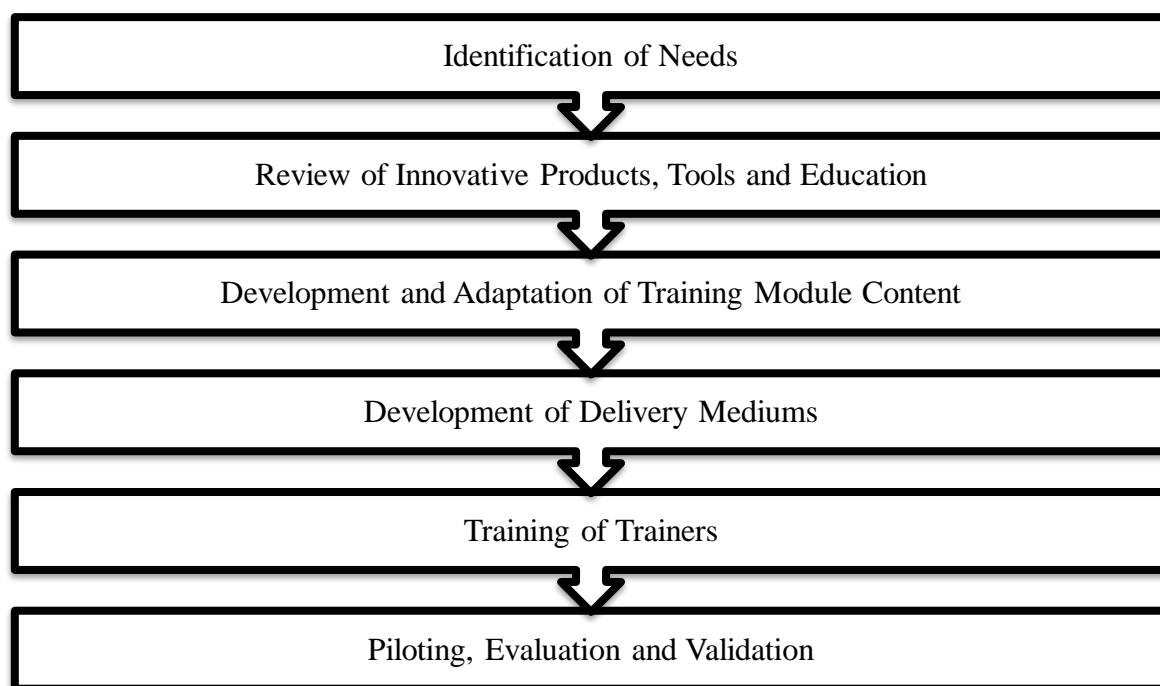


Fig. 2: Ship DIGEST Approach Overview

2.1 Identification of Needs

The objective of the identification of needs phase of the project is to create a 'snapshot' of the Turkish ship dismantling employees covering various states of education, competences and capabilities from the lowest grade of worker through to management level. Through utilising this information the various gaps in awareness, knowledge and procedures can be identified and addressed in the development of training content.

2.2 Review of Innovative Products, Tools and Education

From the products, tools and education from previously EU funded projects and related industries, this section of the project will gather and review the applicability of these outputs in relation to their intended end use within the Turkish ship dismantling industry. This phase of the project will essentially be a selection process of suitability of the available knowledge.

2.3 Development and Adaptation of Training Module Content

In this phase of the project the creation of a framework and content for the ship dismantling vocational education will be carried out. The learning units along with their associated learning outcomes, performance criteria and evidence requirements will be generated to be submitted to an accreditation body (SQA, 2008).

2.4 Development of Delivery Mediums

The development of delivery mediums phase of the project refers to the creation of visual materials, presentations and animations, 'best practice' ship dismantling process videos, which will be compatible for the classroom and e-learning platform dissemination.

2.5 Training of Trainers

In this project phase, a framework for the training of trainers of the ship dismantling vocational education will be developed to guarantee the prolonged existence of the created vocational education even after the project's completion.

2.6 Piloting, Evaluation and Validation

Within the scope of the Ship DIGEST a full pilot activity of the created vocational education will be conducted to allow for evaluation, improvements and future vocation education recommendations.

Through implementing the approach detailed above the impact expected is that, through vocational education, an improvement in the health, safety and environmental competencies and an increase in the awareness of ship dismantling employees will lead to a decrease in fatal and serious injuries and environmental incidents. In addition, a higher rate of reporting accidents and injuries will also be achieved and an improvement in the overall image of an industry that is renowned as being one of the most hazardous and one that attracts employees from lower social statuses. In the long term it is expected that by offering employees the chance to obtain recognised skills and qualifications, the profession of being a ship dismantling employee will become more credible within their own society due to supporting their lifelong learning and enhancing their mobility.

4. SHIP DIGEST PROGRESS

The Ship DIGEST project began in November 2011 and since then the consortium has already delivered interesting and innovative outputs. In this section an overview of progress to date will be presented.

3.1 Report on Training Needs Analysis for the Turkish Ship Dismantling Industry

A comprehensive report which provides a 'snapshot' of the Turkish Ship Dismantling employees' by capturing the various states of education, competences and capabilities from the lowest grade of worker through to the management level has been authored. Topics included within this report include:

- A review of Turkish ship dismantling accident and incident statistics
- A critique of current training for ship dismantling employees

- An overview of current ship dismantling practices and identification of potential hazards through field observations
- Results, analysis and feedback from the Ship DIGEST questionnaire and workshop for the Turkish Ship Dismantlers
- Recommendation and identification of the key problem areas and training needs for ship dismantling employees (Table 1 & 2)

Ship Dismantling Workers Problem Areas	
Existing training	Currently not extensive enough to fully address the training requirements of the workers
No standard procedures	No practical standard procedures for job tasks which worker can follow
Common accidents	Injuries from explosion, suffocation, burning; falling from height and being crushed/struck by an object.
Non adequate reporting of accidents, incidents and near miss incidents	No culture of reporting accidents and incidents amongst the workers
Low job satisfaction	Wages they earn and their prospects of career progression
No training for metal cutters	No bespoke training currently for metal cutting
Poor hazard identification	Unawareness of hazards in worker's workplace
PPE non compliance	Workers are continuing to refrain from wearing PPE even when provided with equipment from the management
Environmental awareness	There is currently no environmental awareness training module for Ship Dismantling workers

Table 1: Ship Dismantling Workers Problem Areas

Ship Dismantling Management Problem Areas	
No existing training for management level	Currently no training for those in charge of ship dismantling facilities
Non adequate reporting of accidents, incidents and near miss incidents	The management currently lack skills on how to set up a systematic way of recording such incidents along with being active in encouraging a reporting culture
No evidence of skills or training in effective accident investigation	There is little to no evidence that suggests an efficient and effective accident investigation takes place
Lack of awareness in the topic of HSE risk assessment	There is little evidence that effective risk assessment for occupational health and safety and the environment is carried out
Lack of awareness in the importance of PPE (suitability, maintenance and replacement)	Workers are wearing PPE which is either not suitable for the purpose intended, not maintained properly or not replaced when required
Lack of awareness of HSE liabilities	The awareness of the HSE liabilities of the management of Ship Dismantling facilities is low

Table 2: Ship Dismantling Management Problem Areas

By analysing the gathered information the various gaps in awareness, knowledge and procedures found within the Turkish ship dismantling industry have been identified and will be utilised in the development and execution of the proposed vocational education.

3.2 Report on Innovative Products, Tools and Education

A report has also been generated which is essentially an extensive database of products, tools and training which has been reviewed in terms of its suitability for application in a ship dismantling context. It has been found that there is a plethora of useful approaches, guidelines, policies, training plans and materials which can be adapted and utilised within the Ship DIGEST project.

3.3 Development and Adaptation of Training Module Content

In terms of training module content it was decided from the outset that the Ship DIGEST project would produce vocational education for both the worker and the management level. Unfortunately due to the scope of the Transfer of Innovation funding of this project being limited to a proof of concept pilot, it is not possible to develop a full suite of vocational education materials. Therefore the Ship DIGEST consortium had to focus in on some key areas which have been finalised as the following:

- Ship Dismantling Worker Training Award (3 Units)
 - Personal Protective and Safety Equipment
 - Hazard Identification, Common Accidents and Risk Assessment
 - Oxy-Fuel Metal Cutting
- Ship Dismantling Management Training Award (3 Units)
 - Managing Health and Safety Liabilities
 - Accident/Incident Reporting and Investigation
 - Hazard Identification, Risk Assessment and Mitigation

The identified units above have subsequently been further developed to include learning outcomes, performance criteria and evidence requirements and have recently been submitted to the Scottish Qualifications Authority for approval. This will mean that any individual who completes the 3 prescribed units of the Ship Dismantling Worker or Management Training will receive a recognised vocational award which demonstrates knowledge, skills and competences gained.

3.4 Development of Delivery Mediums

In order to make the created vocational education as informative and interesting as possible it was planned to make the created vocational education as visual and interactive as possible. Through utilisation of a consortium member's ship recycling facility in Turkey innovative hazardous material and common accident walkthrough videos have been created in addition to 'how to' video segments. These videos will now be utilised within the classroom and e-learning platform elements of the Ship DIGEST outputs.



Fig. 3: Ship DIGEST Vocational Education Filming Activities

4. FUTURE ACTIVITIES

Work within the Ship DIGEST project is still very much ongoing with the most crucial elements of the project due within the next six months before project completion at the end of 2013. Within the Ship DIGEST project there are two planned pilot activities in the Aliaga ship dismantling zone in Turkey which will be critical in ensuring that the training is fit for purpose and making any adjustments required from feedback received. The piloting activities will also be crucial in establishing the training of trainer's network, as it is planned to teach those selected to train in the first of those pilot activities and then supervise them teaching in the second. Thus, meaning a framework for a vocational education legacy is put in place for all those who work within the Turkish ship dismantling industry.

5. CONCLUSION

Within the scope and life cycle of the Ship DIGEST project the aim is to deliver a vocational education pilot for the Turkish ship dismantling workers and management. However after the project's life cycle a continuation of the development of vocational education for the ship dismantling industry is planned. Through the envisaged success of the piloting activities of the Ship DIGEST project, investment will be sought to further develop outputs and a full vocational education suite covering all elements of ship dismantling. This vocational education suite will then be offered to ship dismantling locations worldwide so that workers and management also in those locations can benefit from the framework of success developed within the Ship DIGEST project.

ACKNOWLEDGMENT

The authors of this paper would like to acknowledge the partners of the Ship DIGEST consortium who contributed to the research discussed within. In addition the authors would also like to acknowledge that without the funding of the EU's Leonardo Da Vinci Transfer of Innovation programme this paper would not have been possible.

LITERATURE

Basel Convention, 2003. Technical guidelines for the environmentally sound management of the full and partial dismantling of ships

DEFRA, 2007. UK Ship Recycling Strategy.

www.defra.gov.uk/environment/waste/strategy/ship.htm

EU, 2006. European Credit System For Vet(Ecvet) Technical Specifications

- EU, 2008. Commission presents EU strategy for safer ship dismantling. IP/08/1733. Brussels, 19 November 2008 .<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/1733&format=HTML&aged=0&language=EN&guiLanguage=en>.
- EU, 2009. Education and Training 2020 (ET 2020) link:
http://ec.europa.eu/education/lifelong-learning-policy/doc36_en.htm. Last accessed 20.02.2011
- EU, 2010. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. An Agenda for new skills and jobs: A European contribution towards full employment November 2011
- EU, 2011. Supporting vocational education and training in Europe: the Bruges Communiqué
- ILO, 2004. Safety and Health in Shipbreaking: Guidelines for Asian Countries and Turkey
- IMO, 2005. ‘New Legally Binding Instrument on Ship Recycling’ MEPC Resolution A.981(24),
- SQA, 2008. Credit Rating and Levelling Scottish Vocational Qualifications for the Scottish Credit and Qualifications Framework Guidance for Sector Skills Councils, Standard Setting Bodies, Awarding Bodies and Participants
- Unal, NB, 2011. A Statistical Study of the Occupational Health and Safety Hazards within the Turkish SD Industry (In Turkish).